#3   OIPE

```
RAW SEQUENCE LISTING                    DATE: 02/14/2002
PATENT APPLICATION:  US/10/025,648      TIME: 19:31:56

         Input Set : N:\Crf3\RULE60\10025648.txt
         Output Set: N:\CRF3\02142002\J025648.raw

         SEQUENCE LISTING
 4 (1) GENERAL INFORMATION:
 6      (i) APPLICANT: Bisgard-Frantzen, Henrik
 7                      Svendsen, Allan
 8                      Borchert, Torben Vedel
10     (ii) TITLE OF INVENTION: AMYLASE VARIANTS
12    (iii) NUMBER OF SEQUENCES: 32
14     (iv) CORRESPONDENCE ADDRESS:
15          (A) ADDRESSEE: Novo Nordisk of North America, Inc.
16          (B) STREET: 405 Lexington Avenue, Suite 6400
17          (C) CITY: New York
18          (D) STATE: New York
19          (E) COUNTRY: U.S.A.
20          (F) ZIP: 10174-6401
22      (v) COMPUTER READABLE FORM:
23          (A) MEDIUM TYPE: Floppy disk
24          (B) COMPUTER: IBM PC compatible
25          (C) OPERATING SYSTEM: PC-DOS/MS-DOS
26          (D) SOFTWARE: PatentIn Release #1.0, Version #1.25 (EPO)
28     (vi) CURRENT APPLICATION DATA:
C--> 29          (A) APPLICATION NUMBER: US/10/025,648
C--> 30          (B) FILING DATE: 19-Dec-2001
36          (C) CLASSIFICATION:
33    (vii) PRIOR APPLICATION DATA:
34          (A) APPLICATION NUMBER: 08/600,656
35          (B) FILING DATE: 13-FEB-1996
38   (viii) ATTORNEY/AGENT INFORMATION:
39          (A) NAME: Lambiris, Elias J.
40          (B) REGISTRATION NUMBER: 33,728
41          (C) REFERENCE/DOCKET NUMBER: 4318.204-US
43     (ix) TELECOMMUNICATION INFORMATION:
44          (A) TELEPHONE: 212 867 0123
45          (B) TELEFAX: 212 867 0298
48 (2) INFORMATION FOR SEQ ID NO: 1:
50      (i) SEQUENCE CHARACTERISTICS:
51          (A) LENGTH: 485 amino acids
52          (B) TYPE: amino acid
53          (C) STRANDEDNESS: single
54          (D) TOPOLOGY: linear
56     (ii) MOLECULE TYPE: peptide
58     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
60          His His Asn Gly Thr Asn Gly Thr Met Met Gln Tyr Phe Glu Trp Tyr
61          1               5               10              15
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ENTERED

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 63     Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ala
 64             20              25              30
 66     Asn Leu Lys Ser Lys Gly Ile Thr Ala Val Trp Ile Pro Pro Ala Trp
 67             35              40              45
 69     Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
 70         50              55              60
 72     Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
 73     65              70              75              80
 75     Thr Arg Asn Gln Leu Gln Ala Ala Val Thr Ser Leu Lys Asn Asn Gly
 76             85              90              95
 78     Ile Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
 79             100             105             110
 81     Gly Thr Glu Ile Val Asn Ala Val Glu Val Asn Arg Ser Asn Arg Asn
 82             115             120             125
 84     Gln Glu Thr Ser Gly Glu Tyr Ala Ile Glu Ala Trp Thr Lys Phe Asp
 85         130             135             140
 87     Phe Pro Gly Arg Gly Asn Asn His Ser Ser Phe Lys Trp Arg Trp Tyr
 88     145             150             155             160
 90     His Phe Asp Gly Thr Asp Trp Asp Gln Ser Arg Gln Leu Gln Asn Lys
 91             165             170             175
 93     Ile Tyr Lys Phe Arg Gly Thr Gly Lys Ala Trp Asp Trp Glu Val Asp
 94             180             185             190
 96     Thr Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met
 97             195             200             205
 99     Asp His Pro Glu Val Ile His Glu Leu Arg Asn Trp Gly Val Trp Tyr
100         210             215             220
102      Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
103     225             230             235             240
105      Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Thr
106             245             250             255
108      Thr Gly Lys Pro Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
109             260             265             270
111      Gly Ala Ile Glu Asn Tyr Leu Asn Lys Thr Ser Trp Asn His Ser Val
112             275             280             285
114      Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
115         290             295             300
117      Gly Tyr Tyr Asp Met Arg Asn Ile Leu Asn Gly Ser Val Val Gln Lys
118     305             310             315             320
120      His Pro Thr His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
121             325             330             335
123      Gly Glu Ala Leu Glu Ser Phe Val Gln Gln Trp Phe Lys Pro Leu Ala
124             340             345             350
126      Tyr Ala Leu Val Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
127             355             360             365
129      Gly Asp Tyr Tyr Gly Ile Pro Thr His Gly Val Pro Ala Met Lys Ser
130             370             375             380
132      Lys Ile Asp Pro Leu Leu Gln Ala Arg Gln Thr Phe Ala Tyr Gly Thr
133     385             390             395             400
135      Gln His Asp Tyr Phe Asp His His Asp Ile Ile Gly Trp Thr Arg Glu
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              RAW SEQUENCE LISTING            DATE: 02/14/2002
              PATENT APPLICATION:  US/10/025,648   TIME: 19:31:57

              Input Set : N:\Crf3\RULE60\10025648.txt
              Output Set: N:\CRF3\02142002\J025648.raw
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136                     405              410              415
138     Gly Asn Ser Ser His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
139             420              425              430
141     Gly Pro Gly Gly Asn Lys Trp Met Tyr Val Gly Lys Asn Lys Ala Gly
142             435              440              445
144     Gln Val Trp Arg Asp Ile Thr Gly Asn Arg Thr Gly Thr Val Thr Ile
145             450              455              460
147     Asn Ala Asp Gly Trp Gly Asn Phe Ser Val Asn Gly Gly Ser Val Ser
148     465              470              475              480
150     Val Trp Val Lys Gln
151                     485
154 (2) INFORMATION FOR SEQ ID NO: 2:
156     (i) SEQUENCE CHARACTERISTICS:
157             (A) LENGTH: 485 amino acids
158             (B) TYPE: amino acid
159             (C) STRANDEDNESS: single
160             (D) TOPOLOGY: linear
162     (ii) MOLECULE TYPE: peptide
164     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
166     His His Asn Gly Thr Asn Gly Thr Met Met Gln Tyr Phe Glu Trp His
167     1               5               10              15
169     Leu Pro Asn Asp Gly Asn His Trp Asn Arg Leu Arg Asp Asp Ala Ser
170             20              25              30
172     Asn Leu Arg Asn Arg Gly Ile Thr Ala Ile Trp Ile Pro Pro Ala Trp
173             35              40              45
175     Lys Gly Thr Ser Gln Asn Asp Val Gly Tyr Gly Ala Tyr Asp Leu Tyr
176             50              55              60
178     Asp Leu Gly Glu Phe Asn Gln Lys Gly Thr Val Arg Thr Lys Tyr Gly
179     65              70              75              80
181     Thr Arg Ser Gln Leu Glu Ser Ala Ile His Ala Leu Lys Asn Asn Gly
182             85              90              95
184     Val Gln Val Tyr Gly Asp Val Val Met Asn His Lys Gly Gly Ala Asp
185             100             105             110
187     Ala Thr Glu Asn Val Leu Ala Val Glu Val Asn Pro Asn Asn Arg Asn
188             115             120             125
190     Gln Glu Ile Ser Gly Asp Tyr Thr Ile Glu Ala Trp Thr Lys Phe Asp
191             130             135             140
193     Phe Pro Gly Arg Gly Asn Thr Tyr Ser Asp Phe Lys Trp Arg Trp Tyr
194     145             150             155             160
196     His Phe Asp Gly Val Asp Trp Asp Gln Ser Arg Gln Phe Gln Asn Arg
197             165             170             175
199     Ile Tyr Lys Phe Arg Gly Asp Gly Lys Ala Trp Asp Trp Glu Val Asp
200             180             185             190
202     Ser Glu Asn Gly Asn Tyr Asp Tyr Leu Met Tyr Ala Asp Val Asp Met
203             195             200             205
205     Asp His Pro Glu Val Val Asn Glu Leu Arg Arg Trp Gly Glu Trp Tyr
206             210             215             220
208     Thr Asn Thr Leu Asn Leu Asp Gly Phe Arg Ile Asp Ala Val Lys His
209     225             230             235             240
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RAW SEQUENCE LISTING   DATE: 02/14/2002
PATENT APPLICATION: US/10/025,648   TIME: 19:31:57

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

```
211      Ile Lys Tyr Ser Phe Thr Arg Asp Trp Leu Thr His Val Arg Asn Ala
212                      245             250             255
214      Thr Gly Lys Glu Met Phe Ala Val Ala Glu Phe Trp Lys Asn Asp Leu
215                      260             265             270
217      Gly Ala Leu Glu Asn Tyr Leu Asn Lys Thr Asn Trp Asn His Ser Val
218               275             280             285
220      Phe Asp Val Pro Leu His Tyr Asn Leu Tyr Asn Ala Ser Asn Ser Gly
221           290             295             300
223      Gly Asn Tyr Asp Met Ala Lys Leu Leu Asn Gly Thr Val Val Gln Lys
224      305             310             315                     320
226      His Pro Met His Ala Val Thr Phe Val Asp Asn His Asp Ser Gln Pro
227                      325             330                 335
229      Gly Glu Ser Leu Glu Ser Phe Val Gln Glu Trp Phe Lys Pro Leu Ala
230               340             345             350
232      Tyr Ala Leu Ile Leu Thr Arg Glu Gln Gly Tyr Pro Ser Val Phe Tyr
233               355             360             365
235      Gly Asp Tyr Tyr Gly Ile Pro Thr His Ser Val Pro Ala Met Lys Ala
236           370             375             380
238      Lys Ile Asp Pro Ile Leu Glu Ala Arg Gln Asn Phe Ala Tyr Gly Thr
239      385             390             395                     400
241      Gln His Asp Tyr Phe Asp His His Asn Ile Ile Gly Trp Thr Arg Glu
242                      405             410             415
244      Gly Asn Thr Thr His Pro Asn Ser Gly Leu Ala Thr Ile Met Ser Asp
245               420             425             430
247      Gly Pro Gly Gly Glu Lys Trp Met Tyr Val Gly Gln Asn Lys Ala Gly
248               435             440             445
250      Gln Val Trp His Asp Ile Thr Gly Asn Lys Pro Gly Thr Val Thr Ile
251           450             455             460
253      Asn Ala Asp Gly Trp Ala Asn Phe Ser Val Asn Gly Gly Ser Val Ser
254      465             470             475                     480
256      Ile Trp Val Lys Arg
257                      485
260  (2) INFORMATION FOR SEQ ID NO: 3:
262      (i) SEQUENCE CHARACTERISTICS:
263          (A) LENGTH: 514 amino acids
264          (B) TYPE: amino acid
265          (C) STRANDEDNESS: single
266          (D) TOPOLOGY: linear
268      (ii) MOLECULE TYPE: peptide
270      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
272      Ala Ala Pro Phe Asn Gly Thr Met Met Gln Tyr Phe Glu Trp Tyr Leu
273      1               5               10              15
275      Pro Asp Asp Gly Thr Leu Trp Thr Lys Val Ala Asn Glu Ala Asn Asn
276                      20              25              30
278      Leu Ser Ser Leu Gly Ile Thr Ala Leu Trp Leu Pro Pro Ala Tyr Lys
279               35              40              45
281      Gly Thr Ser Arg Ser Asp Val Gly Tyr Gly Val Tyr Asp Leu Tyr Asp
282           50              55              60
284      Leu Gly Glu Phe Asn Gln Lys Gly Ala Val Arg Thr Lys Tyr Gly Thr
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RAW SEQUENCE LISTING   DATE: 02/14/2002
PATENT APPLICATION: US/10/025,648   TIME: 19:31:57

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

285	65					70					75					80
287	Lys	Ala	Gln	Tyr	Leu	Gln	Ala	Ile	Gln	Ala	Ala	His	Ala	Ala	Gly	Met
288					85				90				95			
290	Gln	Val	Tyr	Ala	Asp	Val	Val	Phe	Asp	His	Lys	Gly	Gly	Ala	Asp	Gly
291				100				105				110				
293	Thr	Glu	Trp	Val	Asp	Ala	Val	Glu	Val	Asn	Pro	Ser	Asp	Arg	Asn	Gln
294			115				120				125					
296	Glu	Ile	Ser	Gly	Thr	Tyr	Gln	Ile	Gln	Ala	Trp	Thr	Lys	Phe	Asp	Phe
297		130				135				140						
299	Pro	Gly	Arg	Gly	Asn	Thr	Tyr	Ser	Ser	Phe	Lys	Trp	Arg	Trp	Tyr	His
300	145				150				155				160			
302	Phe	Asp	Gly	Val	Asp	Trp	Asp	Glu	Ser	Arg	Lys	Leu	Ser	Arg	Ile	Tyr
303				165				170				175				
305	Lys	Phe	Arg	Gly	Ile	Gly	Lys	Ala	Trp	Asp	Trp	Glu	Val	Asp	Thr	Glu
306				180				185				190				
308	Asn	Gly	Asn	Tyr	Asp	Tyr	Leu	Met	Tyr	Ala	Asp	Leu	Asp	Met	Asp	His
309			195				200				205					
311	Pro	Glu	Val	Val	Thr	Glu	Leu	Lys	Ser	Trp	Gly	Lys	Trp	Tyr	Val	Asn
312		210				215				220						
314	Thr	Thr	Asn	Ile	Asp	Gly	Phe	Arg	Leu	Asp	Ala	Val	Lys	His	Ile	Lys
315	225				230				235				240			
317	Phe	Ser	Phe	Phe	Pro	Asp	Trp	Leu	Ser	Asp	Val	Arg	Ser	Gln	Thr	Gly
318				245				250				255				
320	Lys	Pro	Leu	Phe	Thr	Val	Gly	Glu	Tyr	Trp	Ser	Tyr	Asp	Ile	Asn	Lys
321			260				265				270					
323	Leu	His	Asn	Tyr	Ile	Met	Lys	Thr	Asn	Gly	Thr	Met	Ser	Leu	Phe	Asp
324		275				280				285						
326	Ala	Pro	Leu	His	Asn	Lys	Phe	Tyr	Thr	Ala	Ser	Lys	Ser	Gly	Gly	Thr
327		290				295				300						
329	Phe	Asp	Met	Arg	Thr	Leu	Met	Thr	Asn	Thr	Leu	Met	Lys	Asp	Gln	Pro
330	305				310				315				320			
332	Thr	Leu	Ala	Val	Thr	Phe	Val	Asp	Asn	His	Asp	Thr	Glu	Pro	Gly	Gln
333				325				330				335				
335	Ala	Leu	Gln	Ser	Trp	Val	Asp	Pro	Trp	Phe	Lys	Pro	Leu	Ala	Tyr	Ala
336			340				345				350					
338	Phe	Ile	Leu	Thr	Arg	Gln	Glu	Gly	Tyr	Pro	Cys	Val	Phe	Tyr	Gly	Asp
339			355				360				365					
341	Tyr	Tyr	Gly	Ile	Pro	Gln	Tyr	Asn	Ile	Pro	Ser	Leu	Lys	Ser	Lys	Ile
342		370				375				380						
344	Asp	Pro	Leu	Leu	Ile	Ala	Arg	Arg	Asp	Tyr	Ala	Tyr	Gly	Thr	Gln	His
345	385				390				395				400			
347	Asp	Tyr	Leu	Asp	His	Ser	Asp	Ile	Ile	Gly	Trp	Thr	Arg	Glu	Gly	Val
348				405				410				415				
350	Thr	Glu	Lys	Pro	Gly	Ser	Gly	Leu	Ala	Ala	Leu	Ile	Thr	Asp	Gly	Pro
351				420				425				430				
353	Gly	Gly	Ser	Lys	Trp	Met	Tyr	Val	Gly	Lys	Gln	His	Ala	Gly	Lys	Val
354			435				440				445					
356	Phe	Tyr	Asp	Leu	Thr	Gly	Asn	Arg	Ser	Asp	Thr	Val	Thr	Ile	Asn	Ser
357		450				455				460						

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/025,648

DATE: 02/14/2002
TIME: 19:31:58

Input Set : N:\Crf3\RULE60\10025648.txt
Output Set: N:\CRF3\02142002\J025648.raw

L:29 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:30 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]